

1. Section V:

The documents of the International Search Report are considered relevant as indicated below:

D1= WO 96 06203 A (OPTICAL COATING LABORATORY INC), February 29, 1996 (1996-02-29)

D2 = DE 43 05 414 A (LINDE AG) August 25, 1994 (1994-08-25)

1.1 The current Claims 12-13 are interpreted "per se" as product claims. In other words, the objects of these claims (electrochromic elements) must be novel and inventive, regardless of their intended use or their manufacturing process. Therefore any document that discloses an object like the one claimed must be considered adverse to the novelty of said object, even if said object was manufactured using a different method or process or is used for a different purpose.

1.2 Document D1 discloses the manufacture of electrochromic elements (see Figures 1A-1B; Page 1, Line 29 to page 3, Line 5) by coating with  $\text{WO}_3$ ,  $\text{Nb}_2\text{O}_5$ ,  $\text{V}_2\text{O}_5$ ,  $\text{NiO}$  or  $\text{IrO}_2$  etc. by reactive sputtering in an atmosphere of oxygen and argon (See Claims 1-13; Page 10, Line 30 to Page 14, Column 16; Examples 1-4). Thus the electrochromic elements manufactured according to D1 also do not have any carbon which, according to this application (See Page 5, second full paragraph) is present in a few atomic per cent.

The addition of hydrocarbons to this sputtering atmosphere is neither mentioned in D1 nor can it be inferred, although the depositing of other defined layers such as nitrides, oxynitrides, carbides etc. is mentioned (See Page 17, Line 20 to Page 18, Line 21). In particular, there is no mention in D1 that such an addition during the deposit of the electrochromic layer leads to a reduction of the reactive charge.

1.3 Document D2 discloses, very generally, a method for coating a substrate (in particular glass) with a metal oxide coating, in particular tin oxide, by means of sputtering in an atmosphere with a balanced basic gas mixture that has an oxidizing and reducing effect, and consists of at least 20 vol.% oxygen, hydrogen and a gaseous hydrocarbon or halogenated

hydrocarbon, optionally with 5-40 vol.% argon (See Claims 1-2). This gas mixture prevents the accretion of the target with oxides (see Column 1, Lines 13-37; Column 2, Lines 40-43).

The manufacture of electrochromic coatings or of electrochromic elements is nowhere mentioned in D2. Document D2 can therefore not be combined with D1, not even by way of inference, because D1 addresses an entirely different objective.

1.4 The remarks presented above show that Claims 1-13 satisfy the requirements of Article 33(2) and (3) PCT. The industrial applicability of the claimed method and of the electrochromic elements is obvious.

*Amended Sheet 3 contains the following text. The new text is underlined:*

... increases drastically. A lengthy conditioning process, however, renders production more costly and is thus undesirable. In addition. Electrochromic coatings produced according to the prior art frequently possess insufficient storage capacity or inadequate coloring efficiency (ratio of transmission range to intercalated charge per unit of area).

WO 96/06203A discloses the manufacture of electrochromic elements by coating with  $\text{WO}_3$ ,  $\text{Nb}_2\text{O}_5$ ,  $\text{V}_2\text{O}_5$ ,  $\text{NiO}$  or  $\text{IrO}_2$  by reactive sputtering in an atmosphere of oxygen and argon.

A process according to the preamble of Claim 1 is known from GB 2 086 601 A. According to this publication ...oxygen and hydrogen vapor are added to the coating atmosphere, in order to produce electrochromic hydroxide coatings from metal targets. As a coating process clearly preferable to cathode sputtering with a coating atmosphere containing water vapor, reactive ion plating with the addition of water vapor is employed. The electrochromic coatings produced in this way are used for the production of electrochromic displays where  $\text{H}^+$  ions are used as charge carriers. In a large-scale industrial sputtering process, the addition of water vapor to the coating atmosphere can only be controlled with difficulty and leads to significant lack of uniformity in the coating properties and in the distribution of coating thickness.

The object of the invention is to provide a process with which electrochromic coatings can be produced by cathode sputtering with at all events less positive or even negative blind charge. With the process, it should in addition be possible to produce electrochromic coatings with higher storage capacity (absorption capacity) for positively charged ions, in particular  $\text{W}$  ions or  $\text{Li}^+$  ions. The process should be easier to control than cathode sputtering in a coating atmosphere with addition of water vapor.

*Amended Sheet 3a contains the following text:*

To achieve this object, the invention proposes that at least one gaseous hydrocarbon be added to the coating atmosphere. Especially suitable are the saturated hydrocarbons, and preferably methane. This gaseous saturated hydrocarbon is characterized by an especially high proportion of hydrogen to carbon per molecule. It has been found that the desired effect of the addition to the coating atmosphere according to the invention is best achieved if the ratio of hydrogen to carbon in the molecule of the hydrocarbon is high, as with excessive carbon content of the molecule, excessive carbon is incorporated in the coatings, as a result of which the electrochromic properties can deteriorate. In addition, it is possible, with a ...